SEQUENCE LISTING

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<120> HYBRID PROTEINS OF ACTIVE-SITE SERINE BETA-LACTAMASE

<130> STERN29.002APC

<150> PCT/EP2005/050174
<151> 2005-01-17

<150> EP 04075430.1
<151> 2001-02-11

<160> 68

<170> FastSEQ for Windows Version 4.0

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ttcgatgtaa cccactcgtg cacccaactg atcttcagca tcttttactt tcaccagcgt 780
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<210> 2
<211> 921
<212> DNA
<213> Bacillus licheniformis

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aatgaaaaga cggagatgaa agatgatttt gcaaaacttg aggaacaatt tgatgcaaaa 180
ctcgggatct ttgcattgga tacaggtaca aaccggacgg tagcgtatcg gccggatgag 240
cgttttgctt ttgcttcgac gattaaggct ttaactgtag gcgtgctttt gcaacagaaa 300
tcaatagaag atctgaacca gagaataaca tatacacgtg atgatcttgt aaactacaac 360
ccgattacgg aaaagcacgt tgatacggga atgacgctca aagagcttgc ggatgcttcg 420
cttcgatata gtgacaatgc ggcacagaat ctcattctta aacaaattgg cggacctgaa 480
agtttgaaaa aggaactgag gaagattggt gatgaggtta caaatcccga acgattcgaa 540

ccagagttaa atgaagtgaa tccgggtgaa actcaggata ccagtacagc aagagcactt 600
gtcacaagcc ttcgagcctt tgctcttgaa gataaacttc caagtgaaaa acgcgagctt 660
ttaatcgatt ggatgaaacg aaataccact ggagacgcct taatccgtgc cggtgtgccg 720
gacggttggg aagtggctga taaaactgga gcggcatcat atggaacccg gaatgacatt 780
gccatcattt ggccgccaaa aggagatcct gtcgttcttg cagtattatc cagcagggat 840
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<210> 3
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<212> DNA
<213> Streptomyces cacaoi

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ggttgcggga cgagcgcaca cggctcggcg gacgcccacg agaaggagtt ccgggcgctg 180
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accgagaagc acgtcgcgga cggcatgtcc ctgcgcgagc tgtgcgacgc cgtcgtggcc 480
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acgcgggtcc tcaagcagct cggcgaccac accacgagca tggaccgcta cgagcaggag 600
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gacctgcgcg ccttcgccgt cgaggacggc gagaaggccg ccctcgcgcc caacgaccgc 720
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<211> 286
<212> PRT
<213> Escherichia coli

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Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
        35   40   45
Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
    50   55   60
Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
65   70   75   80
Arg Val Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
                85   90   95
Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
            100   105   110
Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
        115   120   125
Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
    130   135   140
Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145   150   155   160
Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
                165   170   175
Asp Thr Thr Met Pro Ala Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
            180   185   190
Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp

195 200 205
Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
210 215 220
Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225 230 235 240
Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
245 250 255
Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
260 265 270
Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp
275 280 285

<210> 5
<211> 307
<212> PRT
<213> Bacillus licheniformis

<400> 5
Met Lys Leu Trp Phe Ser Thr Leu Lys Leu Lys Lys Ala Ala Ala Val
1 5 10 15
Leu Leu Phe Ser Cys Val Ala Leu Ala Gly Cys Ala Asn Asn Gln Thr
20 25 30
Asn Ala Ser Gln Pro Ala Glu Lys Asn Glu Lys Thr Glu Met Lys Asp
35 40 45
Asp Phe Ala Lys Leu Glu Glu Gln Phe Asp Ala Lys Leu Gly Ile Phe
50 55 60
Ala Leu Asp Thr Gly Thr Asn Arg Thr Val Ala Tyr Arg Pro Asp Glu
65 70 75 80
Arg Phe Ala Phe Ala Ser Thr Ile Lys Ala Leu Thr Val Gly Val Leu
85 90 95
Leu Gln Gln Lys Ser Ile Glu Asp Leu Asn Gln Arg Ile Thr Tyr Thr
100 105 110
Arg Asp Asp Leu Val Asn Tyr Asn Pro Ile Thr Glu Lys His Val Asp
115 120 125
Thr Gly Met Thr Leu Lys Glu Leu Ala Asp Ala Ser Leu Arg Tyr Ser
130 135 140
Asp Asn Ala Ala Gln Asn Leu Ile Leu Lys Gln Ile Gly Gly Pro Glu
145 150 155 160
Ser Leu Lys Lys Glu Leu Arg Lys Ile Gly Asp Glu Val Thr Asn Pro
165 170 175
Glu Arg Phe Glu Pro Glu Leu Asn Glu Val Asn Pro Gly Glu Thr Gln
180 185 190
Asp Thr Ser Thr Ala Arg Ala Leu Val Thr Ser Leu Arg Ala Phe Ala
195 200 205
Leu Glu Asp Lys Leu Pro Ser Glu Lys Arg Glu Leu Leu Ile Asp Trp
210 215 220
Met Lys Arg Asn Thr Thr Gly Asp Ala Leu Ile Arg Ala Gly Val Pro
225 230 235 240
Asp Gly Trp Glu Val Ala Asp Lys Thr Gly Ala Ala Ser Tyr Gly Thr
245 250 255
Arg Asn Asp Ile Ala Ile Ile Trp Pro Pro Lys Gly Asp Pro Val Val
260 265 270
Leu Ala Val Leu Ser Ser Arg Asp Lys Lys Asp Ala Lys Tyr Asp Asp
275 280 285
Lys Leu Ile Ala Glu Ala Thr Lys Val Val Met Lys Ala Leu Asn Met
290 295 300
Asn Gly Lys
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<210> 6
<211> 325

<212> PRT
<213> Streptomyces cacaoi

<400> 6
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20 25 30
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35 40 45
Ser Ala Asp Ala His Glu Lys Glu Phe Arg Ala Leu Glu Lys Lys Phe
50 55 60
Asp Ala His Pro Gly Val Tyr Ala Ile Asp Thr Arg Asp Gly Gln Glu
65 70 75 80
Ile Thr His Arg Ala Asp Glu Arg Phe Ala Tyr Gly Ser Thr Phe Lys
85 90 95
Ala Leu Gln Ala Gly Ala Ile Leu Ala Gln Val Leu Arg Asp Gly Arg
100 105 110
Glu Val Arg Arg Gly Ala Glu Ala Asp Gly Met Asp Lys Val Val His
115 120 125
Tyr Gly Gln Asp Ala Ile Leu Pro Asn Ser Pro Val Thr Glu Lys His
130 135 140
Val Ala Asp Gly Met Ser Leu Arg Glu Leu Cys Asp Ala Val Val Ala
145 150 155 160
Tyr Ser Asp Asn Thr Ala Ala Asn Leu Leu Phe Asp Gln Leu Gly Gly
165 170 175
Arg Arg Gly Ser Thr Arg Val Leu Lys Gln Leu Gly Asp His Thr Thr
180 185 190
Ser Met Asp Arg Tyr Glu Gln Glu Leu Gly Ser Ala Val Pro Gly Asp
195 200 205
Pro Arg Asp Thr Ser Thr Pro Arg Ala Phe Ala Glu Asp Leu Arg Ala
210 215 220
Phe Ala Val Glu Asp Gly Glu Lys Ala Ala Leu Ala Pro Asn Asp Arg
225 230 235 240
Glu Gln Leu Asn Asp Trp Met Ser Gly Ser Arg Thr Gly Asp Ala Leu
245 250 255
Ile Arg Ala Gly Val Pro Lys Asp Trp Lys Val Glu Asp Lys Ser Gly
260 265 270
Gln Val Lys Tyr Gly Thr Arg Asn Asp Ile Ala Val Val Arg Pro Pro
275 280 285
Gly Arg Ala Pro Ile Val Val Ser Val Met Ser His Gly Asp Thr Gln
290 295 300
Asp Ala Glu Pro His Asp Glu Leu Val Ala Glu Ala Gly Leu Val Val
305 310 315 320
Ala Asp Gly Leu Lys
325

<210> 7
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 7
tcagttaaca atttcaacaa agaacaacaa aatgct 36

<210> 8
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 8
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<210> 9
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 9
catatgaaaa agaaaaacat ttattcaatt cgt 33

<210> 10
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 10
ggatccttat agttcgcgac gacgtccagc taa 33

<210> 11
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 11
cgggagctca ggctcaccca gaaacgctgg tg 32

<210> 12
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 12
cgggaattct caccaatgct taatcagtga ggcacc 36

<210> 13
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 13
ggctgtactt acaaattaat ccttaatggt aaaacattg 39

<210> 14

<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 14
ctctctttca gttaccgtaa aggtcttagt cgc 33

<210> 15
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 15
aggttttatc catacgacgt cccggactac gccacaact 39

<210> 16
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 16
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<210> 17
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 17
ctcgagaaaa gaaatttggt gaatttccac 30

<210> 18
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 18
gcaacgtgga gtgctccctc tgcagtgttt 30

<210> 19
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 19

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aaactcctgc cggatcagga gtttaagcag 90

<210> 20
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic primer

<400> 20
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tttaagcagc ttgagaagtt tgatgatcgg 90

<210> 21
<211> 54
<212> DNA
<213> Escherichia coli

<400> 21
aacacgtttt actgctgcga actttgctgc aacccagcat gcgcaggttg ctac 54

<210> 22
<211> 18
<212> PRT
<213> Escherichia coli

<400> 22
Asn Thr Phe Tyr Cys Cys Glu Leu Cys Cys Asn Pro Ala Cys Ala Gly
1 5 10 15
Cys Tyr

<210> 23
<211> 201
<212> DNA
<213> Staphylococcus aureus

<400> 23
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aacttaactg aagaacaacg taacggcttc atccaaagcc ttaaagacga tccttcagtg 120
agcaaagaaa ttttagcaga agctaaaaag ctaaacgatg ctcaagcacc aaaagaggaa 180
gacaacaaga aaaaatttcg a 201

<210> 24
<211> 67
<212> PRT
<213> Staphylococcus aureus

<400> 24
Ser Val Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile
1 5 10 15
Leu His Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln
20 25 30
Ser Leu Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala
35 40 45
Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Lys Lys
50 55 60
Lys Phe Arg
65

<210> 25
<211> 375
<212> DNA
<213> Staphylococcus aureus

<400> 25
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agtgctaacc ttttagcaga agctaaaaag ttaaatgaat ctcaagcacc gaaagctgat 180
aacaatttca acaaagaaca acaaaatgct ttctatgaaa ttttacattt acctaactta 240
actgaagaac aacgtaacgg cttcatccaa agccttaaag acgatccttc agtgagcaaa 300
gaaattttag cagaagctaa aaagctaaac gatgctcaag caccaaaaga ggaagacaac 360
aagaaaaaat ttcga 375

<210> 26
<211> 125
<212> PRT
<213> Staphylococcus aureus

<400> 26
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Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln
            20   25   30
Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala
        35   40   45
Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn
    50   55   60
Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu
65   70   75   80
Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
                85   90   95
Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala
            100   105   110
Gln Ala Pro Lys Glu Glu Asp Asn Lys Lys Lys Phe Arg
        115   120   125

<210> 27
<211> 177
<212> DNA
<213> Streptococcus pyogenes

<400> 27
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gctgttgatg ctgctactgc agaaaaagtc ttcaaacaat acgctaacga caacggtgtt 120
gacggtgaat ggacttacga cgatgcgact aagaccttta cggtaactga aagagaa 177

<210> 28
<211> 59
<212> PRT
<213> Streptococcus pyogenes

<400> 28
Gly Cys Thr Tyr Lys Leu Ile Leu Asn Gly Lys Thr Leu Lys Gly Gln
 1   5   10   15
Thr Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys
            20   25   30
Gln Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp
        35   40   45
Ala Thr Lys Thr Phe Thr Val Thr Glu Arg Glu
    50   55

<210> 29
<211> 387
<212> DNA
<213> Streptococcus pyogenes

<400> 29
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gacggtgaat ggacttacga cgatgcgact aagaccttta cagttactga aaaaccagaa 180
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aaaacattga aaggcgaaac aactactaaa gcagtagacg cagaaactgc agaaaaagcc 300
ttcaaacaat acgctaacga caacggtgtt gatggtgttt ggacttatga tgatgcgact 360
aagaccttta cggtaactga aagagag 387

<210> 30
<211> 129
<212> PRT
<213> Streptococcus pyogenes

<400> 30
Gly Cys Thr Tyr Lys Leu Ile Leu Asn Gly Lys Thr Leu Lys Gly Gln
 1   5   10   15
Thr Thr Thr Glu Ala Val Asp Ala Ala Thr Ala Glu Lys Val Phe Lys
            20   25   30
Gln Tyr Ala Asn Asp Asn Gly Val Asp Gly Glu Trp Thr Tyr Asp Asp
        35   40   45
Ala Thr Lys Thr Phe Thr Val Thr Glu Lys Pro Glu Val Ile Asp Ala
    50   55   60
Ser Glu Leu Thr Pro Ala Val Thr Thr Tyr Lys Leu Val Ile Asn Gly
65   70   75   80
Lys Thr Leu Lys Gly Glu Thr Thr Thr Lys Ala Val Asp Ala Glu Thr
                85   90   95
Ala Glu Lys Ala Phe Lys Gln Tyr Ala Asn Asp Asn Gly Val Asp Gly
            100   105   110
Val Trp Thr Tyr Asp Asp Ala Thr Lys Thr Phe Thr Val Thr Glu Arg
        115   120   125
Glu

<210> 31
<211> 39
<212> DNA
<213> Influenza virus

<400> 31
aggttttatc catacgacgt cccggactac gccacaact 39

<210> 32
<211> 13
<212> PRT
<213> Influenza virus

<400> 32
Arg Phe Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Thr Thr
 1   5   10

<210> 33
<211> 384
<212> DNA

<213> Homo sapiens

<400> 33
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gccgcactca gttatggctt ctacggctgc cactgtggcg tgggtggcag aggatccccc 120
aaggatgcaa cggatcgctg ctgtgtcact catgactgtt gctacaaacg tctggagaaa 180
cgtggatgtg gcaccaaatt tctgagctac aagtttagca actcggggag cagaatcacc 240
tgtgcaaaac aggactcctg cagaagtcaa ctgtgtgagt gtgataaggc tgctgccacc 300
tgttttgcta gaaacaagac gacctacaat aaaaagtacc agtactattc caataaacac 360
tgcagaggga gcactccacg ttgc 384

<210> 34
<211> 128
<212> PRT
<213> Homo sapiens

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Thr Gly Lys Glu Ala Ala Leu Ser Tyr Gly Phe Tyr Gly Cys His Cys
            20   25   30
Gly Val Gly Gly Arg Gly Ser Pro Lys Asp Ala Thr Asp Arg Cys Cys
        35   40   45
Val Thr His Asp Cys Cys Tyr Lys Arg Leu Glu Lys Arg Gly Cys Gly
    50   55   60
Thr Lys Phe Leu Ser Tyr Lys Phe Ser Asn Ser Gly Ser Arg Ile Thr
65   70   75   80
Cys Ala Lys Gln Asp Ser Cys Arg Ser Gln Leu Cys Glu Cys Asp Lys
                85   90   95
Ala Ala Ala Thr Cys Phe Ala Arg Asn Lys Thr Thr Tyr Asn Lys Lys
            100   105   110
Tyr Gln Tyr Tyr Ser Asn Lys His Cys Arg Gly Ser Thr Pro Arg Cys
        115   120   125

<210> 35
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic affinity to LPS

<400> 35
ccgatcatca aacttctcaa gctgcttaaa ctcctgcgcc ggaaacttct caagctgctt 60
aaactcctgc cggatcagga gtttaagcag 90

<210> 36
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> HA peptide containing linker

<400> 36
Pro Ile Ile Lys Leu Leu Lys Leu Leu Lys Leu Leu Arg Arg Lys Leu
 1   5   10   15
Leu Lys Leu Leu Lys Leu Leu Pro Asp Gln Glu Phe Lys Gln
            20   25   30

<210> 37

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic peptide

<400> 37
Gly Ser Gly Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Gly Thr Gly
 1   5   10   15

<210> 38
<211> 377
<212> PRT
<213> Escherichia coli

<400> 38
Met Phe Lys Thr Thr Leu Cys Ala Leu Leu Ile Thr Ala Ser Cys Ser
 1   5   10   15
Thr Phe Ala Ala Pro Gln Gln Ile Asn Asp Ile Val His Arg Thr Ile
            20   25   30
Thr Pro Leu Ile Glu Gln Gln Lys Ile Pro Gly Met Ala Val Ala Val
        35   40   45
Ile Tyr Gln Gly Lys Pro Tyr Tyr Phe Thr Trp Gly Tyr Ala Asp Ile
    50   55   60
Ala Lys Lys Gln Pro Val Thr Gln Gln Thr Leu Phe Glu Leu Gly Ser
65   70   75   80
Val Ser Lys Thr Phe Thr Gly Val Leu Gly Gly Asp Ala Ile Ala Arg
                85   90   95
Gly Glu Ile Lys Leu Ser Asp Pro Thr Thr Lys Tyr Trp Pro Glu Leu
            100   105   110
Thr Ala Lys Gln Trp Asn Gly Ile Thr Leu Leu His Leu Ala Thr Tyr
        115   120   125
Thr Ala Gly Gly Leu Pro Leu Gln Val Pro Asp Glu Val Lys Ser Ser
    130   135   140
Ser Asp Leu Leu Arg Phe Tyr Gln Asn Trp Gln Pro Ala Trp Ala Pro
145   150   155   160
Gly Thr Gln Arg Leu Tyr Ala Asn Ser Ser Ile Gly Leu Phe Gly Ala
                165   170   175
Leu Ala Val Lys Pro Ser Gly Leu Ser Phe Glu Gln Ala Met Gln Thr
            180   185   190
Arg Val Phe Gln Pro Leu Lys Leu Asn His Thr Trp Ile Asn Val Pro
        195   200   205
Pro Ala Glu Glu Lys Asn Tyr Ala Trp Gly Tyr Arg Glu Gly Lys Ala
    210   215   220
Val His Val Ser Pro Gly Ala Leu Asp Ala Glu Ala Tyr Gly Val Lys
225   230   235   240
Ser Thr Ile Glu Asp Met Ala Arg Trp Val Gln Ser Asn Leu Lys Pro
                245   250   255
Leu Asp Ile Asn Glu Lys Thr Leu Gln Gln Gly Ile Gln Leu Ala Gln
            260   265   270
Ser Arg Tyr Trp Gln Thr Gly Asp Met Tyr Gln Gly Leu Gly Trp Glu
        275   280   285
Met Leu Asp Trp Pro Val Asn Pro Asp Ser Ile Ile Asn Gly Ser Asp
    290   295   300
Asn Lys Ile Ala Leu Ala Ala Arg Pro Val Lys Ala Ile Thr Pro Pro
305   310   315   320
Thr Pro Ala Val Arg Ala Ser Trp Val His Lys Thr Gly Ala Thr Gly
                325   330   335
Gly Phe Gly Ser Tyr Val Ala Phe Ile Pro Glu Lys Glu Leu Gly Ile
            340   345   350
Val Met Leu Ala Asn Lys Asn Tyr Pro Asn Pro Ala Arg Val Asp Ala

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        355                 360                 365
Ala Trp Gln Ile Leu Asn Ala Leu Gln
    370                 375
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<210> 39
<211> 1140
<212> DNA
<213> Escherichia coli

<400> 39
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cctcaacaaa tcaacgatat tgtgcatcgc acaattaccc cgcttataga gcaacaaaag 120
atcccgggta tggcggtggc ggtaatttat cagggtaaac cttattactt tacctggggc 180
tatgcggaca tcgccaaaaa gcagcccgtc acacagcaaa cgttgtttga gttaggttcg 240
gtcagcaaaa catttactgg cgtgcttggt ggcgacgcta ttgctcgagg ggaaatcaag 300
ttaagcgatc ccacaacaaa atactggcct gaacttaccg ctaaacagtg gaatgggatc 360
acactattac atctcgcaac ctacactgct ggcggcctgc cattgcaggt gccggatgag 420
gtgaaatcct caagcgactt gctgcgcttc tatcaaaact ggcagcctgc atgggctcca 480
ggaacacaac gtctgtatgc caactccagt atcggtttgt tcggcgcact ggctgtgaag 540
ccgtctggtt tgagttttga gcaggcgatg caaactcgtg tcttccagcc actcaaactc 600
aaccatacgt ggattaatgt accgcccgca gaagaaaaga attacgcctg gggatatcgc 660
gaaggtaagg cagtgcatgt ttcgcctggg gcgttagatg ctgaagctta tggtgtgaag 720
tcgaccattg aagatatggc ccgctgggtg caaagcaatt taaaacccct tagtactgat 780
atcaatgaga aaacgcttca acaagggata caactggcac aatctcgcta ctggcaaacc 840
ggcgatatgt atcagggcct gggctgggaa atgctggact ggccggtaaa tcctgacagc 900
atcattaacg gcagtgacaa taaaattgca ctggcagcac gccccgtaaa agcgattacg 960
cccccaactc ctgcagtacg cgcatcatgg gtacataaaa caggggcgac cggcggattt 1020
ggtagctatg tcgcgtttat tccagaaaaa gagctgggta tcgtgatgct ggcaaacaaa 1080
aactatccca atccagcgag agtcgacgcc gcctggcaga ttcttaacgc tctacagtaa 1140

<210> 40
<211> 256
<212> PRT
<213> Bacillus licheniformis

<400> 40
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Met Gln Lys Glu Thr Arg Phe Leu Pro Gly Thr Asn Val Glu Tyr Glu
 1               5                  10                  15
Asp Tyr Ser Thr Phe Phe Asp Lys Phe Ser Ala Ser Gly Gly Phe Val
            20                  25                  30
Leu Phe Asn Ser Asn Arg Lys Lys Tyr Thr Ile Tyr Asn Arg Lys Glu
        35                  40                  45
Ser Thr Ser Arg Phe Ala Pro Ala Ser Thr Tyr Lys Val Phe Ser Ala
    50                  55                  60
Leu Leu Ala Leu Glu Ser Gly Ile Ile Thr Lys Asn Asp Ser His Met
65                  70                  75                  80
Thr Trp Asp Gly Thr Gln Tyr Pro Tyr Lys Glu Trp Asn Gln Asp Gln
                85                  90                  95
Asp Leu Phe Ser Ala Met Ser Ser Ser Thr Thr Trp Tyr Phe Gln Lys
            100                 105                 110
Leu Asp Arg Gln Ile Gly Glu Asp His Leu Arg His Tyr Leu Lys Ser
        115                 120                 125
Ile His Tyr Gly Asn Glu Asp Phe Ser Val Pro Ala Asp Tyr Trp Leu
    130                 135                 140
Asp Gly Ser Leu Gln Ile Ser Pro Leu Glu Gln Val Asn Ile Leu Lys
145                 150                 155                 160
Lys Phe Tyr Asp Asn Glu Phe Asp Phe Lys Gln Ser Asn Ile Glu Thr
                165                 170                 175
Val Lys Asp Ser Ile Arg Leu Glu Glu Ser Asn Gly Arg Val Leu Ser
            180                 185                 190
Gly Lys Thr Gly Thr Ser Val Ile Asn Gly Glu Leu His Ala Gly Trp
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195 200 205
Phe Ile Gly Tyr Val Glu Thr Ala Asp Asn Thr Phe Phe Phe Ala Val
210 215 220
His Ile Gln Gly Glu Lys Arg Ala Ala Gly Ser Ser Ala Ala Glu Ile
225 230 235 240
Ala Leu Ser Ile Leu Asp Lys Lys Gly Ile Tyr Pro Ser Val Ser Arg
245 250 255

<210> 41
<211> 768
<212> DNA
<213> Bacillus licheniformis

<400> 41
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ttttttgata aattttcagc ctcagggggc tttgtcctgt ttaattctaa taggaaaaag 120
tatacaatat acaataggaa agaaagcacc tccagattcg cacctgcttc cacctacaag 180
gtgtttagcg cattgctcgc actggaatcc gggatcatca cgaagaacga ctctcacatg 240
acttgggatg ggactcaata tccgtataaa gaatggaatc aagaccagga tttattctct 300
gcgatgagca gctccacaac atggtatttt caaaaattgg accggcaaat tggggaggat 360
catttacgtc attatctcaa atctatacat tatggaaatg aggatttttc agtcccggcc 420
gattattggc tggatggctc tcttcaaatt tctccacttg aacaggtcaa tatattaaaa 480
aagttttatg ataacgaatt tgattttaaa cagtctaata ttgaaactgt gaaagattcg 540
atacgtttag aagaatcaaa tggcagggtt ttatccggta aaaccggaac ctcggtaatc 600
aacggggaac tccatgccgg ttggtttatc gggtatgtag aaactgccga taatactttt 660
ttctttgctg ttcatattca aggtgaaaaa cgggctgccg gaagctccgc tgccgaaatt 720
gcactttcca ttttagataa aaaagggatt tatccctccg tttcccga 768

<210> 42
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> BlaP alpha helix 8

<400> 42
Ala Arg Ala Leu Ala Thr Ser Leu Gln Ala Phe Ala
1 5 10

<210> 43
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> BlaP alpha helix 9

<400> 43
Ser Glu Lys Arg Glu Leu Leu Ile Asp Trp Met Lys
1 5 10

<210> 44
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> TEM-1 beta-lactamase alpha helix 8

<400> 44
Pro Ala Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
1 5 10

<210> 45
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> TEM-1 beta-lactamase alpha helix 9

<400> 45
Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp Met Glu
1 5 10

<210> 46
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> AmpC alpha helix 8

<400> 46
Ile Glu Asp Met Ala Arg Trp Val Gln Ser Asn Leu
1 5 10

<210> 47
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> AmpC alpha helix 9

<400> 47
Lys Thr Leu Gln Gln Gly Ile Gln Leu Ala
1 5 10

<210> 48
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 48
Leu Leu Thr Gly Glu Leu Leu Thr Leu Ala
1 5 10

<210> 49
<211> 30
<212> DNA
<213> Artificial Sequence

<220>

<223> restriction cassette

<400> 49
ctattaactg gcgaactact tactctagct 30

<210> 50
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 50
Leu Leu Thr Gly Val Pro Leu Thr Gly Thr Leu Ala
1 5 10

<210> 51
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 51
ctattaactg gggtacccct aactggcact ctagct 36

<210> 52
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 52
Leu Leu Thr Gly Val Pro Pro Gly Leu Gln Leu Glu Leu Lys Pro Gly
1 5 10 15
Arg Tyr Pro Leu Thr Gly Glu Leu
20

<210> 53
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 53
ctattaactg gggtaccgcc cgggctgcag ctcgagctta agcccgggcg gtacccccta 60
actggcgaac ta 72

<210> 54
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 54
Leu Leu Thr Gly Val Pro Pro Gly Arg Tyr Pro Leu Thr Gly Glu Leu
1 5 10 15

<210> 55
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 55
ctattaactg gggtaccgcc cgggcggtac cccctaactg gcgaacta 48

<210> 56
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 56
Ala Leu Glu Asp Lys Leu Pro Ser Glu Lys
1 5 10

<210> 57
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 57
gctcttgaag ataaacttcc aagtgaaaaa 30

<210> 58
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 58
Ala Leu Glu Asp Pro Gly Lys Leu Pro Ser Glu Lys
1 5 10

<210> 59
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 59

gctcttgaag atcccgggaa acttccaagt gaaaaa 36

<210> 60
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 60
Val Glu Asp Gly Glu Lys Ala Ala Leu Ala
1 5 10

<210> 61
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 61
gtcgaggacg gcgagaaggc cgccctcgcg 30

<210> 62
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 62
Val Glu Asp Gly Glu Asp Ile Lys Ala Ala Leu Ala
1 5 10

<210> 63
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> restriction cassette

<400> 63
gtcgaggacg gcgaggatat caaggccgcc ctcgcg 36

<210> 64
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> insertion site

<400> 64
Ala Leu Glu Asp Lys Leu Pro Ser Glu Lys
1 5 10

<210> 65
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> insertion site

<400> 65
gctcttgaag ataaacttcc aagtgaaaaa 30

<210> 66
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> insertion site

<400> 66
Ala Leu Glu Asp Pro Arg Phe Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5 10 15
Thr Thr Gly Lys Leu Pro Ser Glu Lys
20 25

<210> 67
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> insertion site

<400> 67
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cttccaagtg aaaaa 75

<210> 68
<211> 115
<212> PRT
<213> Homo sapiens

<400> 68
Asn Leu Val Asn Phe His Arg Met Ile Lys Leu Thr Thr Gly Lys Glu
1 5 10 15
Ala Ala Leu Ser Tyr Gly Phe Tyr Gly Cys His Cys Gly Val Gly Gly
20 25 30
Arg Gly Ser Pro Lys Asp Ala Thr Asp Arg Cys Cys Val Thr His Asp
35 40 45
Cys Cys Tyr Lys Arg Leu Glu Lys Arg Gly Cys Gly Thr Lys Phe Leu
50 55 60
Ser Tyr Lys Phe Ser Asn Ser Gly Ser Arg Ile Thr Cys Ala Lys Gln
65 70 75 80
Asp Ser Cys Arg Ser Gln Leu Cys Glu Cys Asp Lys Ala Ala Ala Thr
85 90 95
Cys Phe Ala Arg Asn Lys Thr Thr Tyr Asn Lys Lys Tyr Gln Tyr Tyr
100 105 110
Ser Asn Lys
115